

Air Force Institute for Operational Health (AFIOH)

Birthplace, Home, and Future of Aerospace Medicine



Global Influenza Surveillance at AFIOH

19 Dec 2006

Institute of Medicine

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U.S. AIR FORCE

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Overview



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- **Overview of AFIOH**
- **Brief historical background**
- **Current surveillance process**
- **Resources and capacity**
- **Historical successes**
- **Questions**
- **Backup slides**
 - **Lab PI processes**
 - **Results summary**
 - **Weekly Report**



AFIOH Overview



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The mission of the AFIOH is to provide world class occupational, environmental, and public health expertise to operational decision- and policy-makers.

- Resources:
 - ~ 400 personnel: 152 military, 117 civil service, ~140 contractors
 - FY06 operating budget: \$12.7M + \$18.0M one-times
 - Facilities: ~180K ft²: 3 main and 6 smaller buildings
- Operations:
 - Labs: ~2M analyses/yr (clinical and environmental)
 - Consultants: ~200 formal technical reports/yr; 1000s of phone calls; scores of site visits; reps on ~98 external/professional organizations
 - Business operations: centralized contracting for relevant services
- Unique deployable teams
 - AF Radiation Assessment Team
 - Theater Epidemiology teams



Brief Historical Background



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- ❖ **“Project Gargle” began in 1976**
 - **USAF’s systematic annual collection of FRI specimens from clinics and hospitals around the world**

- ❖ **Expanded efforts in 1997**
 - **DoD Global Laboratory-Based Influenza Surveillance Program**
 - **AF designated as the Executive Agent for lab-based program**
 - **Funding & professional guidance from DoD-GEIS**

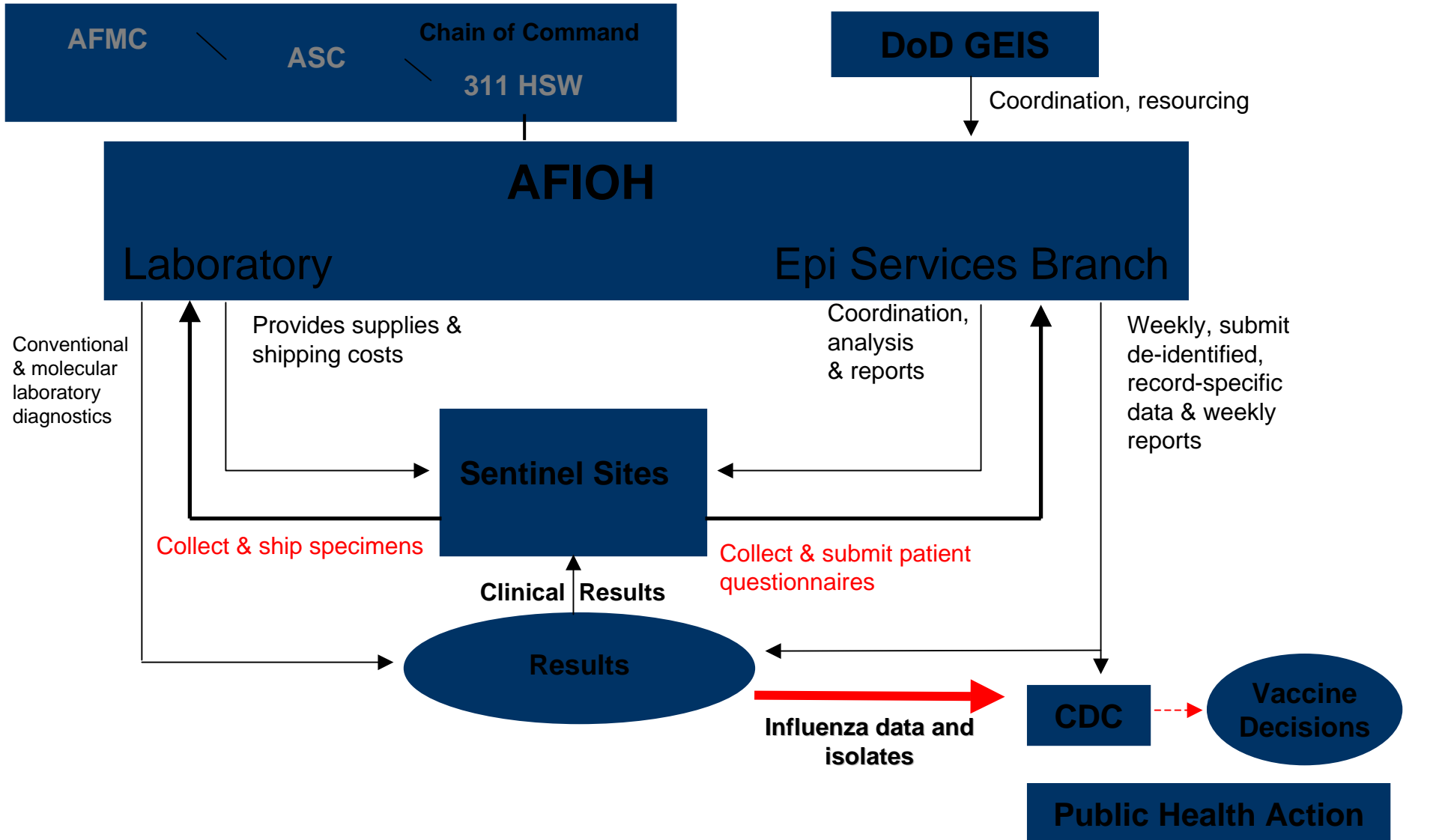
- ❖ **Components of the Lab-Based Surveillance Program**
 - **Sentinel site influenza surveillance**
 - **Managed at AFIOH, Brooks City-Base, TX**
 - **Population-based respiratory surveillance**
 - **Managed at NHRC, San Diego, CA**



Surveillance Process (current)



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Surveillance Process (cont'd)



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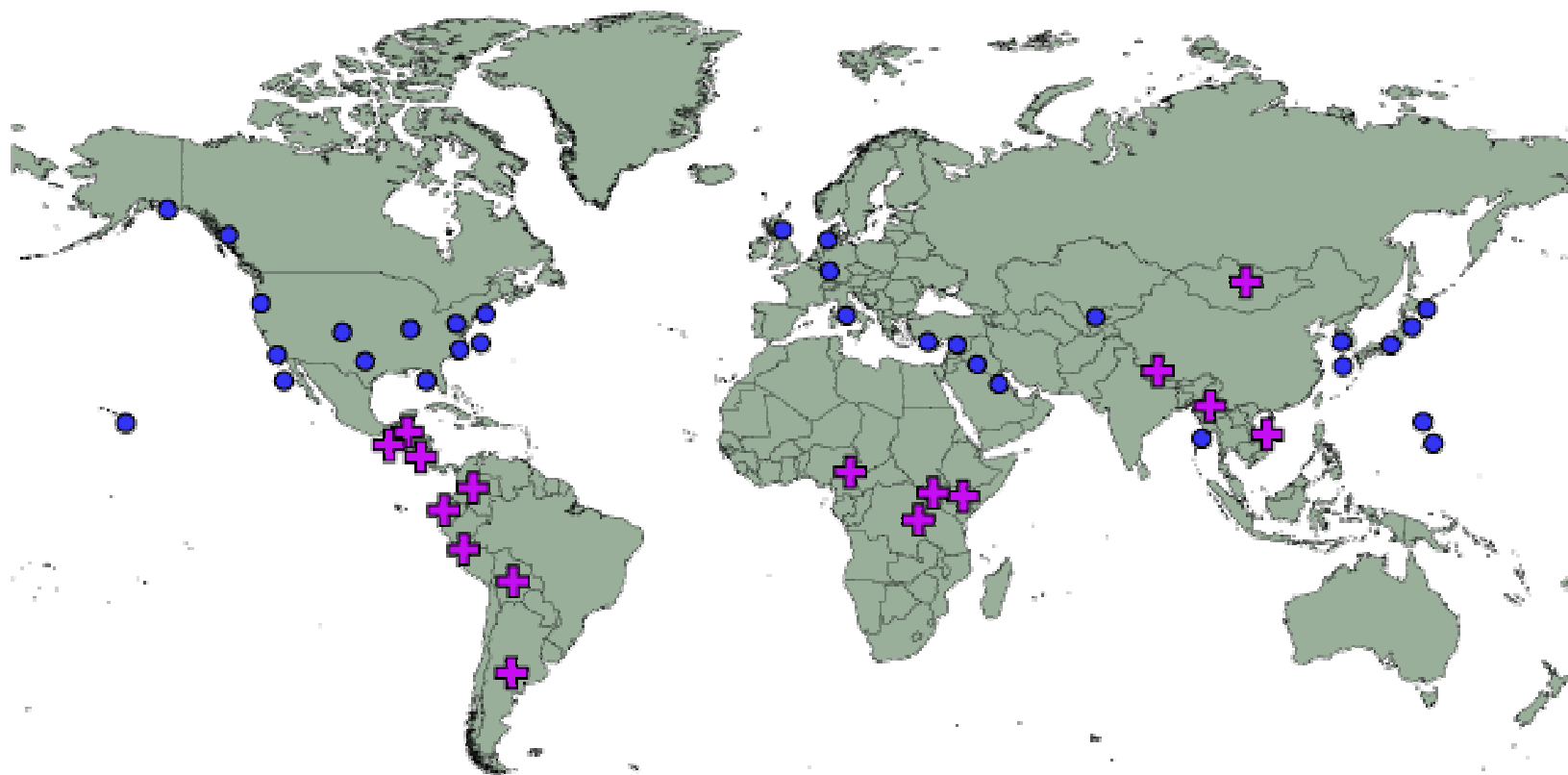
- ❖ 56 Global Sentinel Sites
 - ❖ **43 US MTFs located worldwide**
 - ❖ DoD beneficiaries
 - ❖ Hospitals, health clinics, Emergency clinics, Pediatric clinics
 - ❖ **2 MTFs serving foreign military beneficiaries**
 - ❖ 2 military hospitals in Hungary
 - ❖ **Multiple treatment facilities in 13 allied countries**
 - ❖ Civilian patients in allied countries
 - ❖ Via DoD overseas labs
- ❖ Future Countries (*in the negotiation process now*)
 - ❖ Brazil
 - ❖ Israel
 - ❖ Caribbean states (through SOUTHCOM)
 - ❖ South Africa, Georgia, Romania, Bulgaria (through EUCOM)



Sentinel Sites

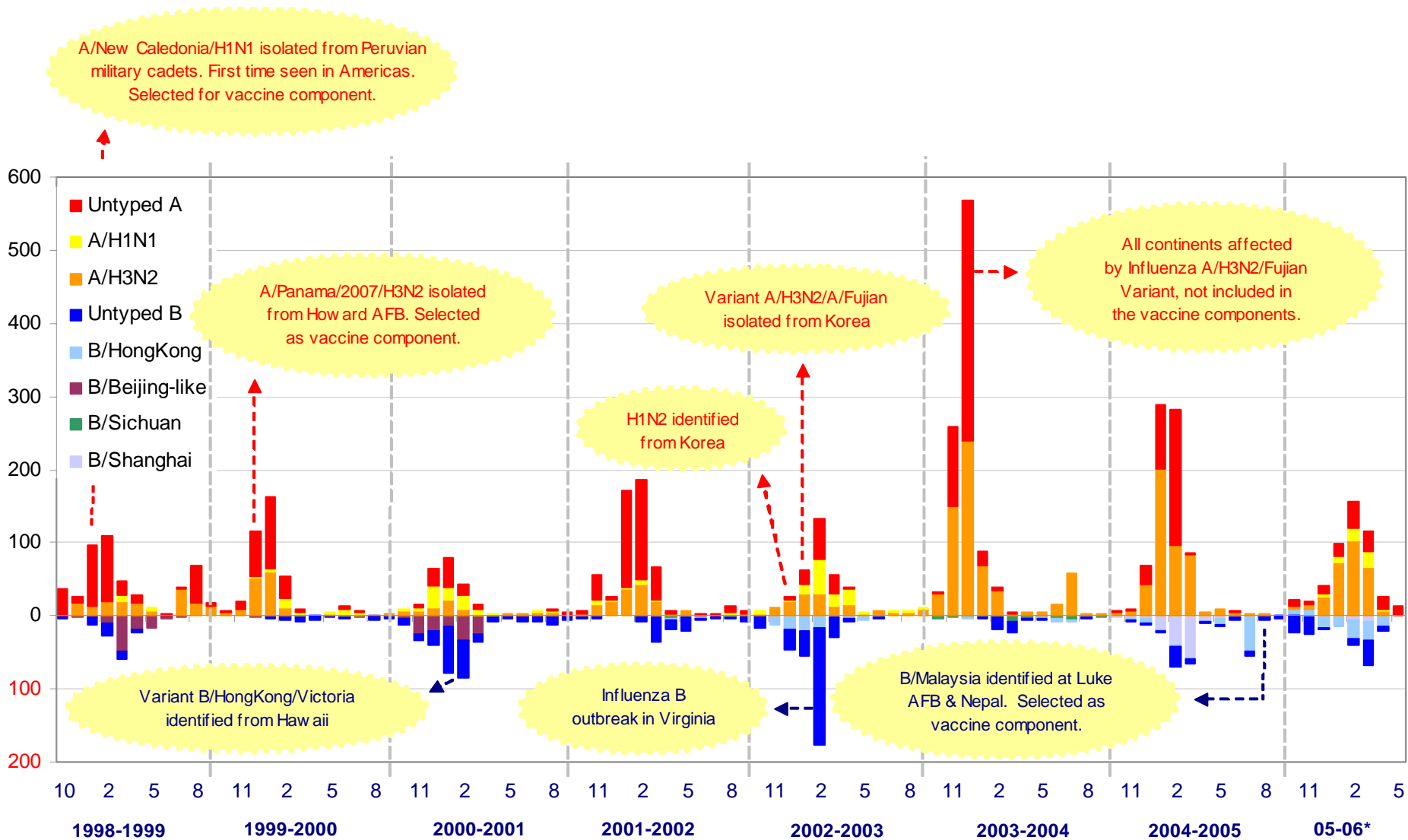
2006-2007 Seasonal Year

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● Sentinel Sites

✚ Clinics and Hospitals Associated with Overseas Labs



*As of 12 June



Impact



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- CDC has received > 900 isolates (1998-2006)
- Growing number of sites internationally
- Identify genetic drifts/shifts through sequencing
- Vaccine contributions in the past:
 - A/Panama/H3N2, 1998: Seed virus for vaccine 4 yrs
 - A/New Caledonia/H1N1: Peruvian cadets, 1999 (led to component decision)
 - A/California/H3N2: Nepal, 2004
 - B/Malaysia: Arizona and Nepal, 2005
- Continuously verify changes or similarities in circulating viruses identified by CDC & WHO.



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Birthplace, Home and Future of Aerospace Medicine

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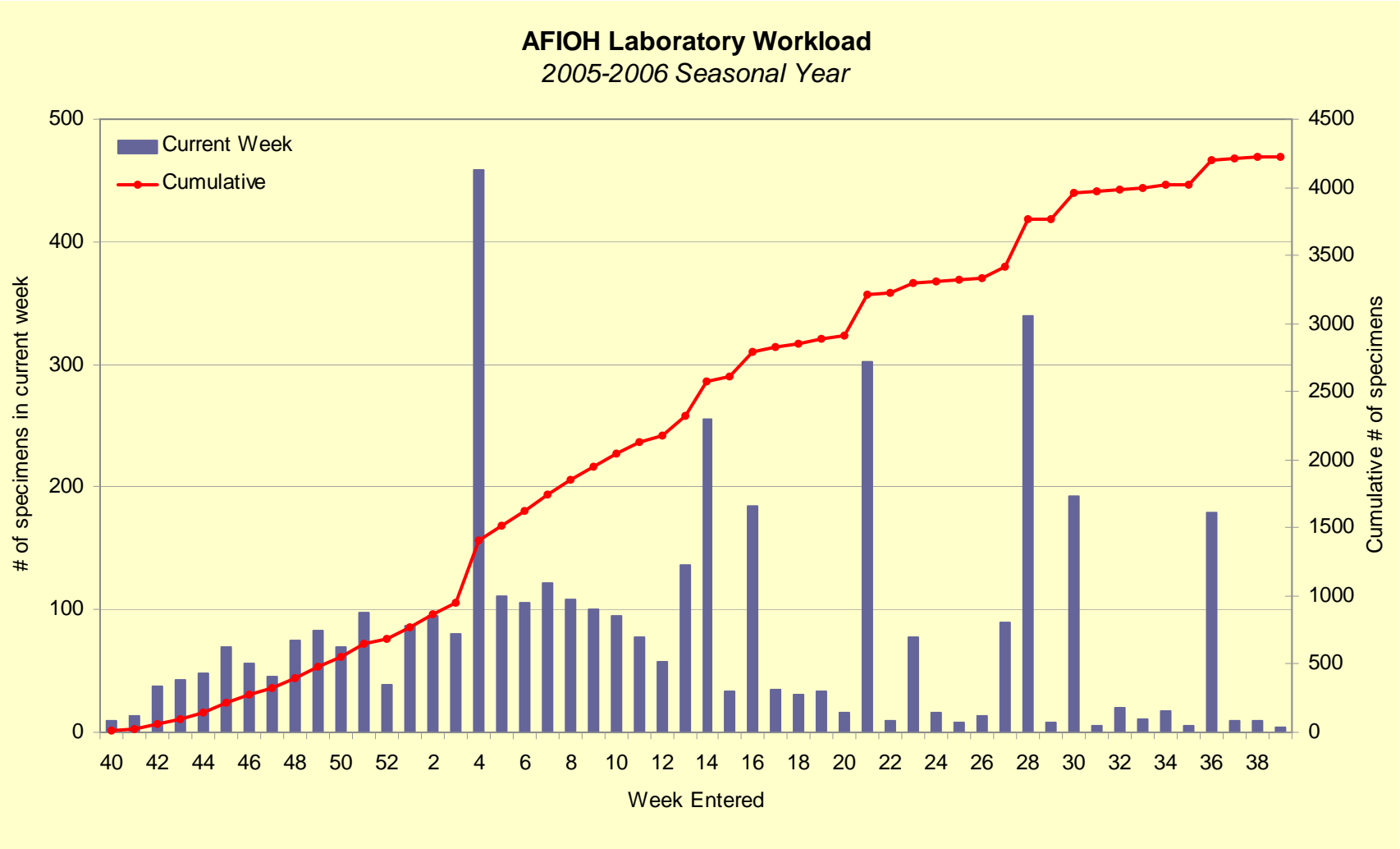
BACKUP SLIDES



Laboratory Workload, 05-06



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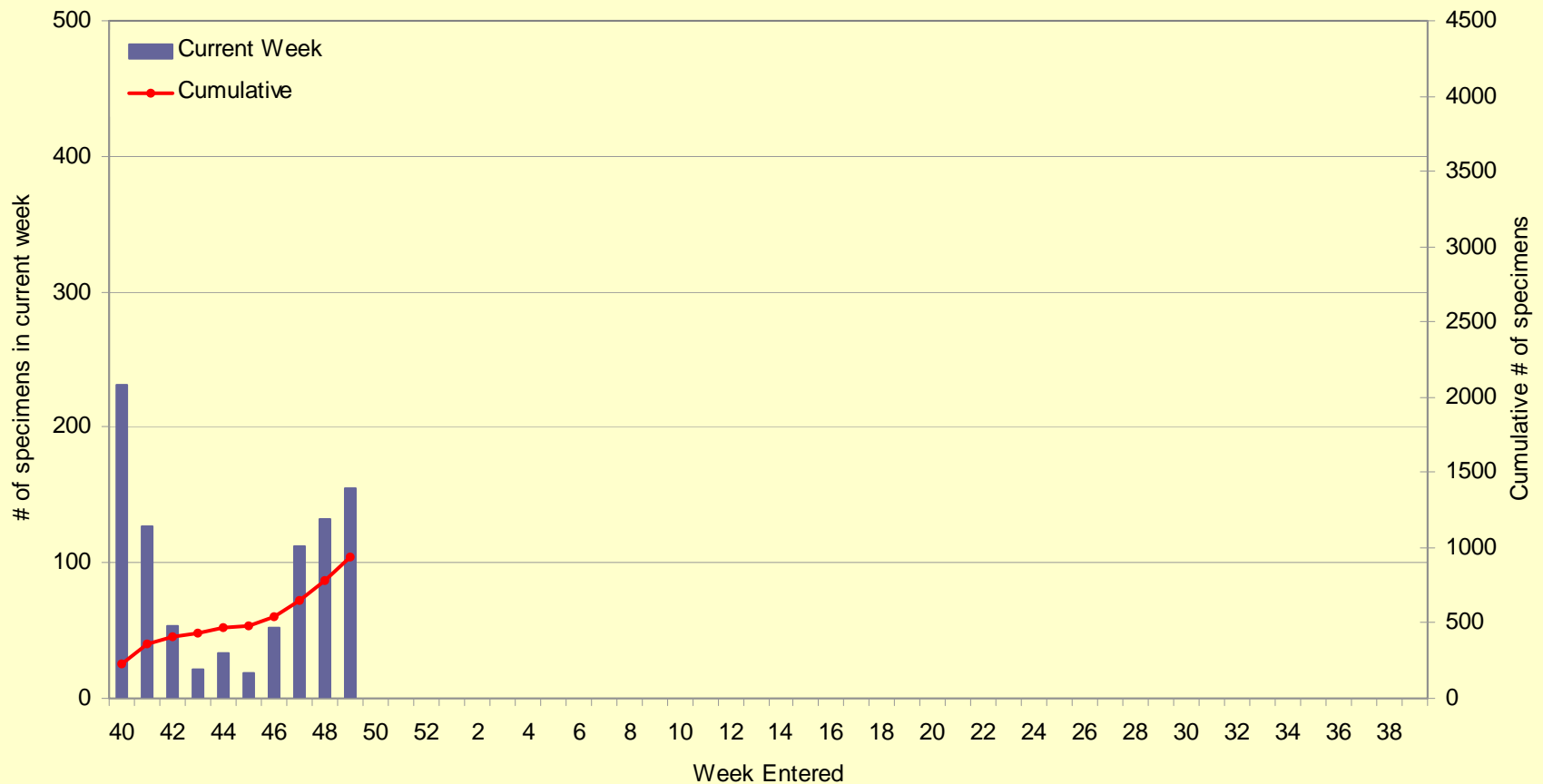


Laboratory Workload, 06-07



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AFIOH Laboratory Workload
2006-2007 Seasonal Year



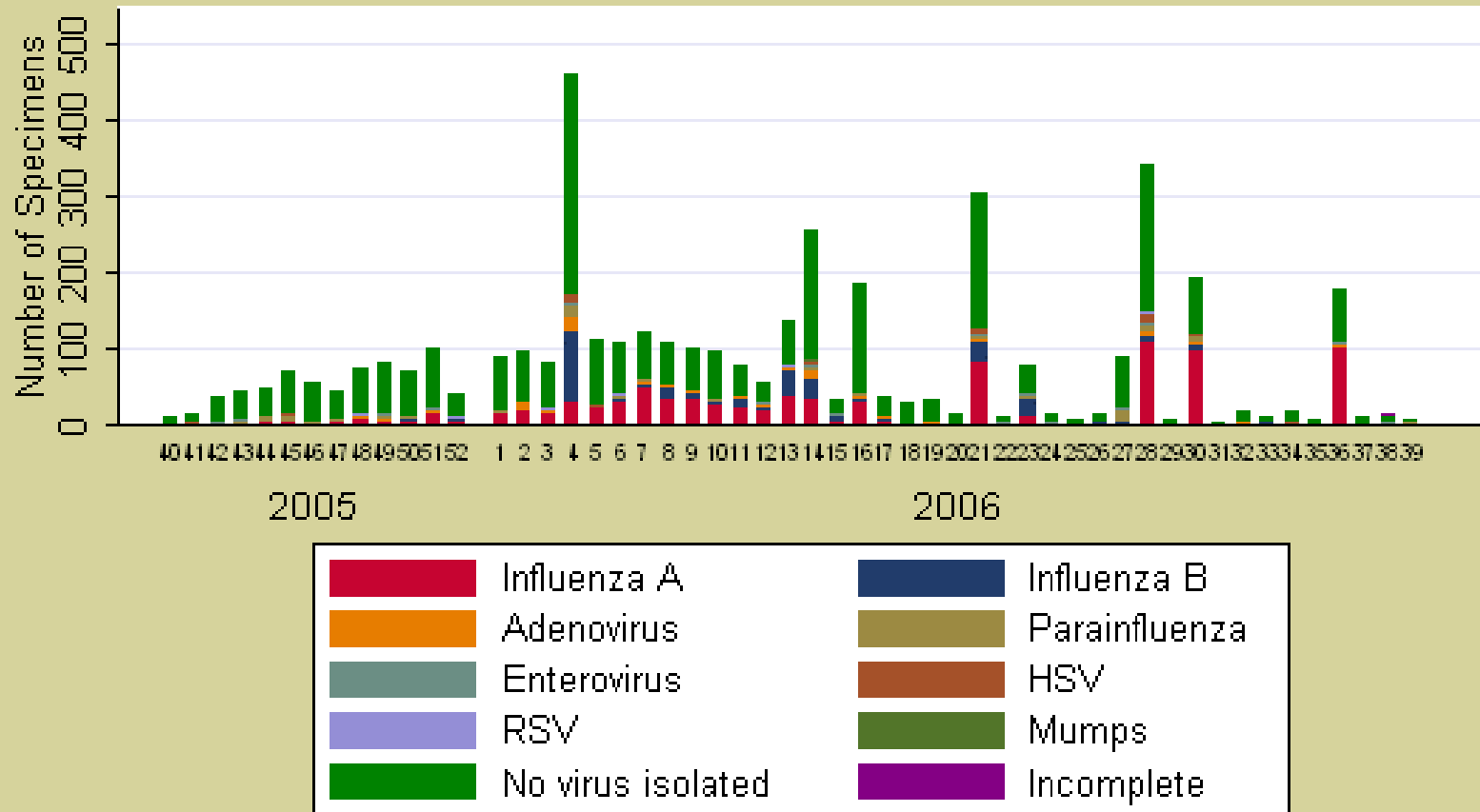


Laboratory Workload, 05-06



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Laboratory Processing by Week and Year Influenza Season 2005-2006



As Of 12 Dec 2006

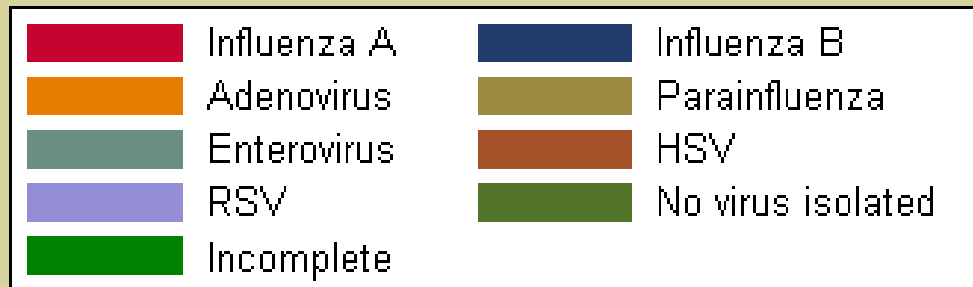
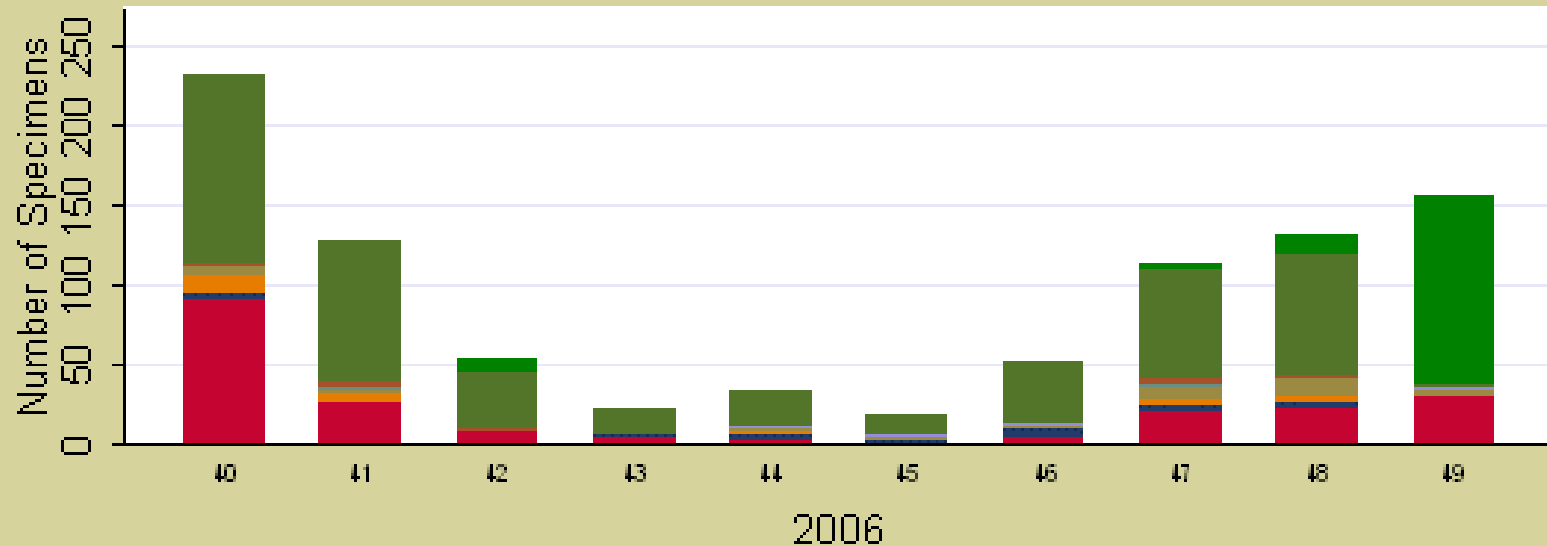


Laboratory Workload, 06-07



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Laboratory Processing by Week and Year Influenza Season 2006-2007



As Of 12 Dec 2006



Weekly Reports



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Influenza Threat Level:

WHO Phase 5

Phase 5 Goal: Ensure rapid characterization of the new virus subtype, & early detection, notification & response to additional cases.

Reference: [WHO Influenza](#)

HP-H5N1 Geographic Location

- No current evidence of HPAI H5N1 within North, Central, or South America.

- The current regional position includes much of Asia, the Middle East, Europe, and portions of Africa.

Overall Lab Surveillance

Total Specimens Collected

- Collected in Week 44: 17
- 06-07 Seasonal Year: 86

Influenza patients by AGE
% of Flu A % of Flu B

AGE	% of Flu A	% of Flu B
0-5:	0%	0%
6-15:	0%	60%
20-64:	0%	0%
65+:	0%	0%
Unk:	100%	60%

Influenza patients by R/M
% of Flu A % of Flu B

R/M	% of Flu A	% of Flu B
AD:	0%	0%
Spouse:	0%	0%
Child:	0%	0%
Foreign:	100%	100%

Sentinel Site Surveillance

Specimens Collected

- 63 specimens
- 74% of total specimens

- 19 Influenza-positive
- 100% of total % positives

Participation Status

- 15 of 48 sentinel sites participated during the 2006-2007 seasonal year

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DoD Global Influenza Surveillance Program: Influenza Surveillance at AFIOH

Week 44

05-11 November 2006

Influenza (01 Oct - Present)

19 Influenza Isolates

13 Influenza A; 6 Influenza B

Influenza A

A (H1N1): 8

A (H3N2): 6

A/U-n-subtyped: 6

Influenza B

B (Hong Kong): 0

B (Shanghai): 0

B/U-n-subtyped: 0

25% of completed specimens were positive for an influenza virus: 12% Influenza A; 11% Influenza B.

Locations of Lab-confirmed Influenza



Human Avian Influenza (H5N1) Update

In CY 2006, a total of 109 highly pathogenic human H5N1 cases (among non-DoD beneficiaries) have been WHO-confirmed in Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Thailand, and Turkey (data as of 31 Oct 2006, WHO).

Click on the following links for updates regarding human HP-H5N1.

- [World Health Organization \(WHO\)](#)
- [Centers for Disease Control and Prevention \(CDC\)](#)
- [Global Emerging Infections System \(GEIS\)](#)
- [WHO Avian Influenza Useful Links](#)

Influenza Outbreaks / News

- No outbreaks have been identified or made aware to AFIOH among surveillance sites this week.
- GEIS staff initiated efforts to expand respiratory surveillance in 8 regions in Brazil.
- EUCOM Influenza surveillance initiative launched. LRMIC will serve as the forward-lab for military treatment facilities throughout Europe. AFIOH will continue to report the EUCOM surveillance data and maintain the DoD repository for respiratory specimens.
- AFIOH anticipates providing weekly updates on molecular characterization data analyzed from respiratory specimens submitted to the program.

AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory. For more background information, please see last page of this report.

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BROOKS CITY-BASE, TX

QUICK REFERENCE

AFIOH Influenza Surveillance

Website

<https://gumbo.brooks.af.mil/pestilence/influenza/>

General Questions?? Email

influenza@brooks.af.mil

Need More Specimen

Collection Kits?? Email

influenza@brooks.af.mil

ATTENTION

Human cases of avian influenza (H5N1) were confirmed in Turkey. This is a concern not only because bird flu in humans spread to southeastern Europe, but because DoD installations are located in the region (see map of Turkey—left).

We are happy to welcome the 121st Army Hospital in South Korea as our 41st sentinel site.

Heads Up: The Influenza Surveillance Questionnaire Database was matched to the AFIOH Laboratory Database. This linked the laboratory and epidemiology data together. However, many questionnaires did not have a matching lab result. Errors in data entry may be the reason for this. Some sites will be contacted and asked to help us resolve the problem.

Please remember the importance of accurately and completely gathering the information requested on the surveillance questionnaires.

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AFIOH Sentinel Surveillance Program Weekly Report

Week 52

25 December 2005 - 31 December 2005



Global Impact of Bird Flu

Source: BBC ([click here](#))

Confirmed H5N1 strain only

Human cases: laboratory-

confirmed since Dec 2003

UK case discovered in

quarantine, so disease-

free status unaffected

Current as of January 13,

2006

Confirmed Human Cases of H5N1 in Turkey

Source: BBC ([click here](#))

Confirmed Turkish H5N1 Cases

⇒ Van - 7, including 2 deaths

⇒ Ankara - 3

⇒ Kastamonu - 2

⇒ Corum - 1

⇒ Samsun - 1

DoD installations are located in Turkey: Incirlik AB and Tenzir. Incirlik is one of our sentinel surveillance sites.



Cumulative Number of Confirmed Avian Influenza A/ (H5N1) Reported to WHO (as of 1/14/06)

Date of onset	Cambodia		China		Indonesia		Thailand		Turkey		Viet Nam		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
2005	0	0	0	0	0	0	0	0	0	0	3	3	3	3
2004	0	0	0	0	0	0	17	12	0	0	28	20	45	32
2005	4	4	0	5	16	11	5	2	0	0	81	16	84	41
2006	0	0	0	0	0	0	0	0	4	2	0	0	4	2
Total	4	4	0	5	17	11	22	14	4	2	93	42	148	78

HEADLINES: AVIAN INFLUENZA

China Reports Ninth Bird Flu Death ([click here](#)) — Jan 18, 2006

Turkey Bird Flu Fatality Rate Low ([click here](#)) — Jan 18, 2006

Iraq Tests Dead Girl for Bird Flu ([click here](#)) — Jan 18, 2006

Turkey Races to Curb Mutated Bird Flu Virus ([click here](#)) — Jan 13, 2006

World Bank Approves First Bird Flu Funding ([click here](#)) — Jan 13, 2006

EU Pledges 100M to Bird Flu Fight ([click here](#)) — Jan 13, 2006

2.2 Billion Needed to Prepare for Bird Flu ([click here](#)) — Jan 13, 2006



AFIOH Presence



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Past, Present and Future
(43 countries)

Afghanistan

Argentina

Bahrain

Bolivia

Brazil

Bulgaria

Burundi

Cameroon

China

Colombia

Ecuador

El Salvador

Georgia

Germany

Guatemala

Honduras

Hungary

Iraq

Israel

Italy

Japan

Kenya

Kuwait

Kyrgyzstan

Mongolia

Nepal

Nicaragua

Peru

Philippines

Qatar

Romania

Saipan

Saudi Arabia

Singapore

South Africa

South Korea

Sri Lanka

Thailand

Turkey

Uganda

UK

USA

Viet Nam



FY07 AI/PI Surveillance Funding

“Where We Need to Go”



Birthplace, Home and Future of Aerospace Medicine

- Sustainment of FY06 Efforts
- Support of Central Hub and Communications Center (24/7) capability
- Expansion of surveillance sites at overseas locations
- Expansion of diagnostic & reporting capabilities
- Expansion of educational and PI preparedness activities at military installations